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EXAMINER

KIM, DAVID S

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/532,250	<b>Applicant(s)</b> NAKAGAWA ET AL.	
	<b>Examiner</b> DAVID S. KIM	<b>Art Unit</b> 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10/1/08, 12/8/08, 12/19/08.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 101-108 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 101-108 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 2613

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

#### **Komine in view of Kobayashi**

3. **Claims 101-103, 105, and 106** are rejected under 35 U.S.C. 103(a) as being unpatentable over Komine et al. ("Integrated system of white LED visible-light communication and power-line communication", hereinafter "Komine") in view of Kobayashi (JP 2001036592 A, references are made to the version machine-translated into English).

**Regarding claim 101**, Komine discloses:

A broadcast system, comprising:

a semiconductor light-emitting source for lighting (LEDs in Fig. 2; LEDs are known to be semiconductor light-emitting sources);

a power line that supplies electric power to the semiconductor light-emitting light source (power-line in Fig. 2);

Art Unit: 2613

a data modulator that modulates data, superimposes the resulting data on an electric power waveform into modulated data, and transmits the modulated data via the power line (power-line modem in Fig. 2); and

a selector that selects one or more pieces of data to be transmitted in the form of light out of the modulated data on the power line (BPF in Fig. 2); and

a superimposing means for superimposing a signal of the selected data onto a voltage to be applied to the semiconductor light-emitting source (adder in Fig. 2).

wherein the data selected by the selector is transmitted based on changes in light intensity or blinking of the semiconductor light-emitting light source (transmission from LEDs to Receiver in Fig. 2).

Komine does not expressly disclose:

a data modulator that modulates and ***multiplexes a plurality of pieces of data***, superimposes the resulting ***plurality of pieces of data*** on an electric power waveform into ***a plurality of modulated pieces of data***, and transmits the ***plurality of modulated pieces of data*** via the power line; and

a selector that selects ***one or more pieces of data*** to be transmitted in the form of light out of ***the plurality of modulated pieces of data*** on the power line.

However, the concept of multiplexing a plurality of pieces of data and filtering out a particular piece(s) of data is extremely well known in the art. Kobayashi provides a suitable example (see the multiplexed frequencies in Drawings 3 and 5 and frequency-selective circuit 8 for filtering out a particular carrier frequency in Drawing 2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement such a well-known concept with the prior art of record. One of ordinary skill in the art would have been motivated to do this for any variety of reasons associated with multiplexed communications. Kobayashi's specific example provides the benefit of shortened processing time when the transmission characteristic in a power line is bad (paragraph [0039]).

**Regarding claim 102**, Komine in view of Kobayashi discloses:

Art Unit: 2613

The broadcast system according to Claim 101, wherein the selector selects data to be transmitted (Komine, transmission from LEDs to Receiver in Fig. 2) based on changes in light intensity or blinking of the LED light source in conformity with instruction data on the power line (Komine, data from the PC on the power-line).

**Regarding claim 103**, Komine in view of Kobayashi discloses:

The broadcast system according to Claim 1, wherein the data modulator frequency division multiplexes a plurality of pieces of data (Kobayashi, frequency multiplexed signals in Drawings 3 and 5), and the selector selects one of a plurality of band pass filters with different frequency bandwidths (Kobayashi, carrier detector circuits 4-7 in Drawing 2) and separates data (Kobayashi, frequency-selective circuit 8 in Drawing 2).

**Regarding claim 105**, Komine in view of Kobayashi discloses:

An electric bulb, which is adapted to be used in a broadcast system according to Claim 101 and receives supplied electric power and emits light for lighting, comprising:

a semiconductor light-emitting light source for lighting (Komine, LEDs in Fig. 2; LEDs are known to be semiconductor light-emitting sources);

a selector that selects one or more of a plurality of pieces of modulated data (e.g., Komine, BPF in Fig. 2; e.g., Kobayashi, frequency-selective circuit 8 in Drawing 2) to be transmitted in the form of light, which are superimposed on supplied electric power (Komine, data superimposed on supplied electric power by power-line modem in Fig. 2); and

a superimposing means for superimposing a signal of the selected data onto a voltage to be applied to the semiconductor light-emitting source (Komine, adder in Fig. 2),

wherein the data selected by the selector is transmitted based on changes in light intensity or blinking of the semiconductor light-emitting light source (Komine, transmission from LEDs to Receiver in Fig. 2).

**Regarding claim 106**, Komine in view of Kobayashi discloses:

The electric bulb according to Claim 105, wherein:

the electric power is AC power (Komine, AC in Fig. 2);

Art Unit: 2613

the electric bulb comprises an AC-DC converter that converts AC power to DC power (Komine, AC/DC in Fig. 2); and

the superimposing means superimposes a data component selected by the selector on the DC power (Komine, the adder before the LEDs in Fig. 2), which is provided by the AC-DC converter (Komine, output from AC/DC in Fig. 2), and drives the semiconductor light-emitting source by the resulting superimposed DC power (Komine, output from the adder in Fig. 2).

Regarding claims 107 and 108, claims 107 and 108 introduce limitations that correspond to the limitations introduced by claims 105 and 106, respectively. Therefore, the treatment of these limitations introduced by claims 105 and 106 read on the corresponding limitations in claims 107 and 108.

#### **Komine in view of Mensing**

4. **Claims 101, 102, and 104-106** are rejected under 35 U.S.C. 103(a) as being unpatentable over Komine in view of Mensing et al. (WO 01/63788 A2, hereinafter "Mensing").

**Regarding claim 101**, Komine discloses:

A broadcast system, comprising:

a semiconductor light-emitting source for lighting (LEDs in Fig. 2; LEDs are known to be semiconductor light-emitting sources);

a power line that supplies electric power to the semiconductor light-emitting light source (power-line in Fig. 2);

a data modulator that modulates data, superimposes the resulting data on an electric power waveform into modulated data, and transmits the modulated data via the power line (power-line modem in Fig. 2); and

a selector that selects one or more pieces of data to be transmitted in the form of light out of the modulated data on the power line (BPF in Fig. 2); and

a superimposing means for superimposing a signal of the selected data onto a voltage to be applied to the semiconductor light-emitting source (adder in Fig. 2).

Art Unit: 2613

wherein the data selected by the selector is transmitted based on changes in light intensity or blinking of the semiconductor light-emitting light source (transmission from LEDs to Receiver in Fig. 2).

Komine does not expressly disclose:

a data modulator that modulates and ***multiplexes a plurality of pieces of data***, superimposes the resulting ***plurality of pieces of data*** on an electric power waveform into ***a plurality of modulated pieces of data***, and transmits the ***plurality of modulated pieces of data*** via the power line; and

a selector that selects ***one or more pieces of data*** to be transmitted in the form of light out of ***the plurality of modulated pieces of data*** on the power line.

However, the concept of multiplexing a plurality of pieces of data and filtering out a particular piece(s) of data is extremely well known in the art. Mensing provides a suitable example (the time-division multiplexed cells on p. 7, l. 14-15 and suggested by the address technique on p. 8, l. 2 for filtering out the appropriate cell). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement such a well-known concept with the prior art of record. One of ordinary skill in the art would have been motivated to do this for any variety of reasons associated with multiplexed communications. In contrast to the single receiving units in Komine (LED lighting box and Receiver box in Fig. 2), Mensing shows that multiplexed communications enable communication transmissions to multiple receiving units (Mensing, CPDs and appliances in Fig. 1), thus serving additional customers.

**Regarding claim 102**, Komine in view of Mensing discloses:

The broadcast system according to Claim 101, wherein the selector selects data to be transmitted (Komine, transmission from LEDs to Receiver in Fig. 2) based on changes in light intensity or blinking of the LED light source in conformity with instruction data on the power line (Komine, data from the PC on the power-line).

**Regarding claim 104**, Komine in view of Mensing discloses:

The broadcast system according to Claim 101, wherein:

Art Unit: 2613

the data modulator time division multiplexes a plurality of pieces of data (Mensing, the time-division multiplexed cells on p. 7, l. 14-15), adds tag data to the resulting divided data (Mensing, ATM header in Fig. 4), and transmits the resulting data; and

the selector identifies data based on the tag data, and selects data (Mensing, the address technique on p. 8, l. 2 suggests some kind of selector for filtering out the appropriate data cell, and a header generally contains address data which would be identified to employ an address technique).

**Regarding claim 105**, Komine in view of Mensing discloses:

An electric bulb, which is adapted to be used in a broadcast system according to Claim 101 and receives supplied electric power and emits light for lighting, comprising:

a semiconductor light-emitting light source for lighting (Komine, LEDs in Fig. 2; LEDs are known to be semiconductor light-emitting sources);

a selector that selects one or more of a plurality of pieces of modulated data (e.g., Komine, BPF in Fig. 2; e.g., Mensing, the time-division multiplexed cells on p. 7, l. 14-15 and suggested by the address technique on p. 8, l. 2 for filtering out the appropriate cell) to be transmitted in the form of light, which are superimposed on supplied electric power (Komine, data superimposed on supplied electric power by power-line modem in Fig. 2); and

a superimposing means for superimposing a signal of the selected data onto a voltage to be applied to the semiconductor light-emitting source (Komine, adder in Fig. 2),

wherein the data selected by the selector is transmitted based on changes in light intensity or blinking of the semiconductor light-emitting light source (Komine, transmission from LEDs to Receiver in Fig. 2).

**Regarding claim 106**, Komine in view of Mensing discloses:

The electric bulb according to Claim 105, wherein:

the electric power is AC power (Komine, AC in Fig. 2);

the electric bulb comprises an AC-DC converter that converts AC power to DC power (Komine, AC/DC in Fig. 2); and



Art Unit: 2613

the superimposing means superimposes a data component selected by the selector on the DC power (Komine, the adder before the LEDs in Fig. 2), which is provided by the AC-DC converter (Komine, output from AC/DC in Fig. 2), and drives the semiconductor light-emitting source by the resulting superimposed DC power (Komine, output from the adder in Fig. 2).

Regarding claims 107 and 108, claims 107 and 108 introduce limitations that correspond to the limitations introduced by claims 105 and 106, respectively. Therefore, the treatment of these limitations introduced by claims 105 and 106 read on the corresponding limitations in claims 107 and 108.

### **Response to Arguments**

5. Applicant introduced new limitations by amendment, e.g., the “superimposing means” in the independent claims. The standing rejection addresses all of these new limitations. See the treatment of the claims above for further details.

6. Applicant's arguments filed on 08 December 2008 have been fully considered but they are not persuasive. Applicant presents three salient points.

**Regarding the first point**, Applicant states:

*Thus, Komine **fails** to disclose, teach, or suggest a data modulator that modulates and multiplexes a plurality of pieces of data, superimposes the resulting plurality of pieces of data on an electric power waveform into a plurality of modulated pieces of data, and transmits the plurality of modulated pieces of data via the power line.*

*Thus, Komine **fails** to disclose, teach, or suggest a filter that selectively separates one or more pieces of data out of the plurality of modulated pieces of data on the power line and controls light intensity or blinking of the LED light source.*

*Moreover, Komine **fails** to disclose, teach, or suggest that the filter has a selector for selecting data.*

(REMARKS, p. 8, emphasis Applicant's).

First of all, Examiner respectfully notes that the current version of the claims does not include a “filter” limitation. Accordingly, this portion of the first point is not persuasive.

Secondly, Examiner respectfully notes that the standing rejection **already** recognizes that Komine does not teach these highlighted limitations. Accordingly, the standing rejection incorporates the teachings of additional prior art (i.e., Kobayashi or Mensing) to provide a **combination(s)** that does address these limitations. For example, the standing rejection relies on Komine to address most of the

Art Unit: 2613

limitations regarding the “data modulator” and the “selector”. The standing rejection relies on additional prior art (i.e., Kobayashi or Mensing) to address the remaining limitations regarding “multiplexes”, “a plurality of pieces of data”, and “a plurality of modulated pieces of data”. Applicant’s point does not address the merits of this **combination(s)**. Therefore, this portion of the first point is not persuasive.

**Regarding the second point**, Applicant states:

*Thus, Kobayashi **fails** to disclose, teach, or suggest a data modulator that modulates and multiplexes a plurality of pieces of data, superimposes the resulting plurality of pieces of data on an electric power waveform into a plurality of modulated pieces of data, and transmits the plurality of modulated pieces of data via the power line.*

(REMARKS, p. 9, 2<sup>nd</sup> paragraph, emphasis Applicant’s).

Examiner respectfully notes that the standing rejection does not rely on Kobayashi **alone** to address these highlighted limitations. Rather, the standing rejection incorporates the teachings of additional prior art (i.e., Komine) to provide a **combination** that does address these limitations. For example, the standing rejection relies on Komine to address most of the limitations regarding the “data modulator”. The standing rejection relies on Kobayashi to address the remaining limitations regarding “multiplexes”, “a plurality of pieces of data”, and “a plurality of modulated pieces of data”. Applicant’s point does not address the merits of this **combination**. Therefore, this point is not persuasive.

**Regarding the third point**, Applicant states:

*Moreover, Komine **fails** to disclose, teach, or suggest that the selector selects data to be transmitted based on changes in light intensity or blinking of the LED light source in conformity with instruction data on the power line.*

(REMARKS, p. 8, 2<sup>nd</sup> to last paragraph, emphasis Applicant’s).

Regarding claim 3 of the present application, the specification provides that the selector 113 selects one or more out of multiple filters in the band pass filter 112, thereby allowing selection of data to be optically distributed (Specification at page 22, lines 19-20). This selection may be manually made; alternatively, it may be made using another method or by selectively demodulating a transmitted control signal of a specific frequency and then making a selection of a filter based on that control signal (Specification at page 22, lines 20-23).

However, Kobayashi **fails** to disclose, teach, or suggest that the frequency-selective circuit 8 as selectively demodulating a transmitted control signal of a specific frequency and then making a selection of a filter based on that control signal.

Instead, paragraph [0019] of the machine translation of Kobayashi arguably provides for a frequency-selective circuit for 8 to choose a carrier frequency from each output signal S3 of the Carrier Detect circuits 4-7, S4, and S5 and S6 based on the computed result of the S/N ratio by the fast Fourier transform processing part 3.

Art Unit: 2613

*Thus, Kobayashi **fails** to disclose, teach, or suggest a broadcast system wherein the selector selects data to be transmitted based on changes in light intensity or blinking of the LED light source in conformity with instruction data on the power line.*

(REMARKS, p. 9, 4<sup>th</sup> paragraph – p. 10, 1<sup>st</sup> paragraph, emphasis Applicant's).

*Nevertheless, Mensing **fails** to disclose, teach, or suggest a broadcast system wherein the selector selects data to be transmitted based on changes in light intensity or blinking of the LED light source in conformity with instruction data on the power line.*

(REMARKS, p. 10, 3<sup>rd</sup> paragraph, emphasis Applicant's).

Examiner respectfully notes that Applicant's reading of this claim limitation (i.e., "selectively demodulating a transmitted control signal of a specific frequency and then making a selection of a filter based on that control signal" (Specification at page 22, lines 20-23)) is **narrower** than the actual claim language. Notice the actual claim language of claim 102:

The broadcast system according to Claim 101, wherein the selector selects data to be transmitted based on changes in light intensity or blinking of the LED light source in conformity with instruction data on the power line.

Applicant's point appears to read the claim language according to the following emphasis (A):

The broadcast system according to Claim 101, wherein the selector **selects** data to be transmitted based on changes in light intensity or blinking of the LED light source ***in conformity with instruction data on the power line.***

Applicant's reading focuses on the interpretation that the selector ***selects...in conformity with instruction data on the power line.*** That is, the ***selecting*** function of the selector is tied to instruction data on the power line.

However, notice the claim language with the following alternative emphasis (B):

The broadcast system according to Claim 101, wherein the selector selects data to be transmitted based on ***changes*** in light intensity or ***blinking*** of the LED light source ***in conformity with instruction data on the power line.***

This alternative reading focuses on the interpretation that the ***changes*** in light intensity or ***blinking*** of the LED light source are ***in conformity with instruction data on the power line.*** That is, the ***changes*** in light intensity or ***blinking*** of the LED light source are/is tied to instruction data on the power line.

The actual claim language of claim 102 is broad enough to encompass both readings (A) and (B).

The standing rejection appropriately addresses reading (B):

Art Unit: 2613

The broadcast system according to Claim 101, wherein the selector (Komine, BPF in Fig. 2) selects data to be transmitted based on **changes** in light intensity or **blinking** of the LED light source (Komine, the selected data is to be transmitted to Receiver based on changes in light intensity or blinking of the LED light of the LEDs in Fig. 2) **in conformity with instruction data on the power line** (Komine, the changes in light intensity or blinking of the LED light source of the LEDs in Fig. 2 would be in conformity with the data on the power line; the scope of such data is broad enough to include any suitable type of data commonly transmitted from a PC to a mobile terminal in Fig. 2, including "instruction data").

Therefore, this point is not persuasive.

If Applicant considers reading (A) to patently distinguish Applicant's invention from the prior art of record, Examiner respectfully encourages Applicant to amend the claim language so that reading (A) is embodied in the claim language, but not reading (B).

**Summarily**, Applicant's arguments are not persuasive. Accordingly, Examiner respectfully maintains the standing rejections.

#### **Conclusion**

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID S. KIM whose telephone number is (571)272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

Art Unit: 2613

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. S. K./  
Examiner, Art Unit 2613

/Kenneth N Vanderpuye/  
Supervisory Patent Examiner, Art Unit 2613